MS4 General Permit
Town of Brookfield 2017 Annual Report
Existing MS4 Permittee
Permit Number GSM 000006
January 1, 2020 – December 31, 2020

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This report documents The Town of Brookfield's efforts to comply with the conditions of the MS4 General Permit to the maximum extent practicable from January 1, 2020 to December 31, 2020.

**Part I: Summary of Minimum Control Measure Activities**

**1. Public Education and Outreach (Section 6 (a)(1) / page 19)**

**1.1 BMP Summary**

| | | |
|---|---|---|
| 2017 | Web Based Library of MS4 educational materials | UCONN Clear /WestCOG / Land Use |
| | Foster partnerships with existing organizations | WestCOG / DPW / Land Use |
| | Provide printed materials for municipal buildings | Land Use |
| | Targeted outreach | Land Use / Sanitarian / DPW / Zoning |
| | Develop/acquire education materials | UCONN / WestCOG / Land Use |
| 2018 | Update Website | DPW / IT |
| | Review Partnerships | WestCOG / DPW |
| | Targeted outreach | Land Use / Sanitarian / DPW / Zoning |
| | Review Education Materials | UCONN Clear /WestCOG / Land Use |
| 2019 | Update Website | DPW / IT |
| | Review Partnerships | WestCOG / DPW / Land Use |
| | Targeted outreach | Land Use / Sanitarian / DPW / Zoning |
| | Review Education Materials | UCONN Clear / WestCOG / Land Use |
| 2020 | Update Website | DPW / IT |
| | Review Partnerships | WestCOG / DPW / Land Use / HVA |
| | Targeted outreach | Land Use / Sanitarian / DPW / Zoning |
| | Review Education Materials | UCONN Clear / WestCOG / Land Use |
| 2021 | Update Website | DPW / IT |
| | Review Partnerships | WestCOG / DPW / Land Use |
| | Targeted outreach | Land Use / Sanitarian / DPW / Zoning |
| | Review Education Materials | UCONN Clear / WestCOG / Land Use |

**1.2 Describe any Public Education and Outreach activities planned for the next year, if applicable.**

In 2020 the Town of Brookfield updated its web based library of materials previously reported on. We also reviewed and updated our materials in the DPW Office, Land Use Department and at our Library. The Director of Public Works and Land Use Manager both attended a three part seminar given by UConn Clear focusing in LID and DCIA (December 2,9,16 of 2020). The knowledge gathered and some of the materials presented will be shared with other town employees in the coming months and put into action when possible.

Previously Reported

The Town has Brookfield has started a web based source of educational materials by updating its website to include a section for Stormwater Management. This section is located under the Department of Public Works and is periodically updated with additional or new information. As part of the materials a digital version of the Towns Stormwater Management Plan is continually posted. There are also numerous links to various other websites that provide useful and educational materials and opportunities to the general public. Some of these are WestCOG, UCONN Clear, The Housatonic Valley Association (HVA), CT NEMO, the Candlewood Lake Authority, Still River Watershed and CT DEEP.

The towns Director of Parks and Recreation, WPCA and town Health Director have been regularly attending meetings held by the Housatonic Valley Association regarding water quality issues along the Still River. In 2019 the Parks and Recreation Department is coordinating a partnership with the Audubon Society to plan an “Ecology Walk” on Brookfield’s recently constructed Still River Greenway open to the general public with the purposes of fun, exercise and education about the activities and issues that impact our environment both negatively and positively.

In the Department of Public Works within the Land Use Department we have printed materials available to all of the public for review. The DPW also receives a monthly publication “Stormwater” that reviews the most current stormwater issues, technology and solutions. This is also available for public review. A library of educational materials will be developed and maintained at the Brookfield Library. A Collection of materials and resources pertaining to stormwater management was completed as part of the previous permit. The materials will be reviewed and updated as necessary. A copy of the Stormwater Management Plan will also be available at the library.

A brochure was developed in 2007 and is still being published as of today. It is available at the Library and the Town Hall and our Land Use Department. This brochure is still relevant but will be reviewed in 2018 to be sure the latest information is contained in it. It explains what stormwater management is, its importance, what the town is doing to limit stormwater contamination and suggestions to the general public on how to reduce pollution which could potentially contaminate water bodies in addition to

We also make available a brochure published by the Long Island Sound Study which provides general information and is subtitled “A Citizens Guide to Curbing Pollution Runoff”

## 2. Public Involvement/Participation (Section 6(a) (2) / page 21)

### 2.1 BMP Summary

| | BMP | Responsible Person |
|---|---|---|
| 2017 | Send out public notice for MSP public comment | DPW |
| | Review public comments | DPW |
| 2018 | Send out public notice for annual report public comment | DPW |
| | Review public comments | DPW |
| 2019 | Send out public notice for annual report public comment | DPW |
| | Review public comments | DPW |
| 2020 | Send out public notice for annual report public comment | DPW |
| | Review public comments | DPW |
| 2021 | Send out public notice for annual report public comment | DPW |
| | Review public comments | DPW |

### 2.2 Describe the Public Notice Process

The Town of Brookfield's Stormwater Management Plan has been and will continue to be published on the Town of Brookfield website for public comment and review. An e-mail address, mailing address and phone number has been provided for public comment and suggestions. Public comments are welcome and encouraged.

The Town of Brookfield " annual report for 2020 will also be published on the town website by February 15, 2020 for review prior to submission to the CT DEEP on April 1, 2020.

The Town of Brookfield " annual report for 2019 will also be published on the town website by February 15, 2019 for review prior to submission to the CT DEEP on April 1, 2020.

The Town of Brookfield " annual report for 2018 will also be published on the town website by February 15, 2018 for review prior to submission to the CT DEEP on April 1, 2019.

## 3. Illicit Discharge Detection and Elimination (Section 6(*a*) (3) and Appendix B / page 22)

### 3.1 BMP Summary

| | BMP | Responsible Person |
|---|---|---|
| 2017 | Develop a written IDDE program | UCONN Clear / DPW / Land Use / Zoning/HVA |
| | Review Existing legal authority | DPW / Land Use / Zoning |
| | Establish legal authority to eliminate illicit discharges | Zoning |
| | Develop mapping platform and database | DPW |
| | Establish citizen reporting program | DPW |
| | Track illicit abatement activities | DPW / Land Use / HVA |
| | Inventory existing mapped infrastructure data | DPW |
| 2018 | Map remaining infrastructure | DPW |
| | Track illicit abatement activities | DPW / Land Use /HVA |
| | Perform ongoing screening and tracking (if needed) | DPW / Land Use / HVA |
| 2019 | Perform ongoing screening and tracking (if needed) | DPW / Land Use / HVA |
| | Finalize MS4 web map | DPW |
| | Track illicit abatement activities | DPW / Land Use / HVA |
| | Update mapping database | DPW |
| 2020 | Perform ongoing screening and tracking (if needed) | DPW / Land Use / HVA |
| | Track illicit abatement activities | DPW / Land Use / HVA |
| | Update mapping database | DPW |
| 2021 | Perform ongoing screening and tracking (if needed) | DPW / Land Use / HVA |
| | Track illicit abatement activities | DPW / Land Use / HVA |
| | Update mapping database | DPW |

### 3.2 Update the Town's IDDE Program

The Town has a draft IDDE program. It used as its guide materials provided by WestCOG, UCONN Clear and CT DEEP. A copy is available upon request.

### 3.3 Legal Authority

Legal Authority is through the Town of Brookfield Zoning Commission enforced by a full time Zoning Enforcement Officer employed by the town. There are current regulations already approved that addresses Aquifer Protection performance and standards (Reg. 242-502G) Any development within the Aquifer Protection Area as per the Brookfield mapping, which includes most of Federal Road, needs a stormwater management plan. Any development within the CT DEEP designated Aquifer Protection Area also needs a stormwater management plan. Two other areas of development that need a stormwater management plan include the Watershed Protection District, which is the Candlewood Lake Drainage Basin, and the Still River Floodplain.

### 3.4 Mapping Platform

In 2020 the town partnered with WestCOG who with their resources and personnel have agreed to map additional infrastructure not captured by aerial photography or maps on file within the town by conducting a systematic and comprehensive field investigation. It is anticipated that the field work will be completed in the spring of 2021 at which time WestCOG will work with our consultant Tighe and Bond to incorporate the data into our digital platform (ArcGIS)

Previously Reported

In 2019 we continued to update our digital mapping platform by verifying catch basin locations, pipe sizes and locations and connections as time and budget permitted. We plan to continue that in 2020. We also worked with our consultant Tighe and Bond to establish an App for Brookfield that will enable us to view and update our digital maps in the field in real time as information becomes available and as changes take place.

In 2018 we were able to map all of our catch basins, manholes and many drainage culverts. We also identified all of our outfalls, priority outfalls, known interconnections, drainage basins, impaired waters and impervious surfaces.

The Town through the DPW has hired Tighe and Bond to establish a digital mapping platform where all of our stormwater infrastructure could be identified and mapped. To date we have completed the establishment of the platform. We have chosen Arc GIS. The platform will allow us to update information immediately either in the office or on location as infrastructure is added and removed.

### 3.5 Citizen Reporting

The town has in place a method to allow the general public report potential Illicit Discharges. The contact information is provided on the town website under the Department of Public Works Stormwater Management section. Part of the IDDE program is designed to respond to, investigate and track potential Illicit Discharges. As of the time of this report no Illicit Discharges have been identified or reported by the public in 2020. There was one report made by a DPW employee on October 6, 2020 as indicated on the corresponding table.

List of citizen reports of suspected illicit discharges received during this reporting period.

| Date of Report | Location / suspected source | Response taken |
|---|---|---|
| 10/24/18 | 167 Pocono Road | Inspection Completed by Ralph Tedesco/ Director of DPW who noted standing water in the sump with no infiltration or water running. There were no signs of contamination. |
| 10/6/20 | 150 Laurel Hill Road | Inspection completed by Ralph Tedesco / Director of DPW. Standing water was note in the area CB's with a slight sheen. No infiltration was observed and there was no active flows at the time of inspection. Sheen was determined to be road residue. No odors or smells observed. |

| | | |
|---|---|---|
| 2017<br>2019 | None Reported | |

Provide a record of illicit discharges occurring during the reporting period and SSOs occurring July 2012 through end of reporting period using the following table.

| Location (Lat long/ street crossing /address and receiving water) | Date and duration of occurrence | Discharge to MS4 or surface water | Estimated volume discharged | Known or suspected cause / Responsible party | Corrective measures planned and completed (include dates) | Sampling data (If applicable) |
|---|---|---|---|---|---|---|
| NONE REPORTED in 2018, 2019, 2020 | | | | | | |
| | | | | | | |

**3.6 Briefly describe the method used to track illicit discharge reports, responses to those reports, and who was responsible for tracking this information.**

**Pollution Investigation:**

The appropriate member of the Town staff will investigate all suspected illicit discharges and document field observations in case of enforcement action is taken. Standard field equipment will be used including but not limited to cameras, measuring tapes, gloves and sampling containers. Obvious discharges of hazardous materials such as gasoline, diesel, and unknown chemicals will be reported directly to the Town's 911 system. The investigation of unknown substances will be coordinated with the Hydro Technologies Inc. and the Connecticut DEEP. If needed water quality samples will be collected to identify illicit discharge contaminants and target potential waste streams. Sample results will be compared to reference waste stream "chemical fingerprints" if they have been previously compiled.

After the waste stream characteristics have been identified, the appropriate program managers will coordinate with the stormwater maintenance crews (primarily the towns Department of Public Works) to investigate potential illicit discharge sources. Standard investigative methods may be used such as cameras for infrastructure as well as dye, smoke testing, dams etc. Final determination of the illicit discharge will possibly require facility inspections. If an inspection of a facility is required, notification to the facility owner, manager and scheduling of the inspection will be required.

Illicit Discharge Elimination:

After an illicit discharge is detected and tracked to the source, the stormwater team will work with the responsible party to abate the discharge and initiate remediation activities. Acute or chronic discharges may be issued violations per the Town of Brookfield's code resulting in a fine, court appearance and clean / up costs. Responsible parties with direct discharges (illicit cross connections) to the storm sewer system will be required to have a licensed qualified contractor re-route the pipe to an appropriate discharge point and repair any damage to the storm water infrastructure that their cost. Responsible parties with indirect discharges such as illicit dumping will be required to cease the discharge activities and may receive a ticket and may be required to remediate any damages to the infrastructure and environment. Compliance and enforcement activities will be coordinated through the appropriate Town staff and departments as specified. If needed

Police Department support will be utilized to address acute discharges, chronic offenders or enforcement activities when appropriate.

Ongoing Screening and Tracking:

Brookfield, upon completion of catchment investigation and illicit discharge removal and confirmation (if necessary) for the catchment outfall or interconnection, will schedule follow-up screening within five years, or sooner as determined by the catchment's illicit discharge priority. Follow-up screening shall consist of dry weather screening and sampling except where wet weather screening and sampling is required as detailed in Appendix B of the MS4 permit. We will share information with HVA along the Still River corridor through our partnership with them.

Track illicit abatement activities:

Brookfield will maintain a record of illicit discharge abatement activities including: location (identified with an address or latitude and longitude), description, dates of inspection, sampling data (if applicable), actions taken, date of removal or repair and responsible parties. This information shall be included in the permittee's Annual Report.

In 2018 the town installed a new Electronic Tracking System (Carmody System – SepticSearch.com) to monitor all systems in town and proactively warn residents of the need to pump out their systems on a regular 4 year cycle; except in highly susceptible areas where requirements will be more rigid.

**3.7 Provide a summary of actions taken to address septic failures using the table below. (information provided by the town Sanitarian)**

| ***Location and nature of structure with failing septic systems*** | ***Completion Date*** | ***Actions taken to respond to and address the failures*** | ***Impacted waterbody or watershed, if known*** | ***Nature of septic failure*** |
|---|---|---|---|---|
| 13 Prospect Drive, private home | 3/11/2020 | permit issued, system repaired | Still River | bleed-out |
| 277 Whisconier Road, private home | 4/17/2020 | permit issued, system repaired | Still River | bleed-out |
| 16 Stony Brook Road, private home | 5/7/2020 | permit issued, system repaired | Still River | bleed-out |
| 10 Vista Drive, private home | 5/8/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 54 Mist Hill Road, private home | 5/21/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 4 Blackwood Road, private home | 5/26/2020 | permit issued, system repaired | Still River | bleed-out |
| 32 North Pleasant Rise, private home | 6/3/2020 | permit issued, system repaired | Still River | bleed-out |
| 11 Stony Brook Road, private home | 6/16/2020 | permit issued, system repaired | Still River | bleed-out |
| 18 Deer Run Road, private home | 6/29/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 5 South Ridge Road, private home | 7/16/2020 | permit issued, system repaired | Pond Brook | bleed-out |
| 250 Whisconier Road, private home | 7/27/2020 | permit issued, system repaired | Still River | bleed-out |
| 18 Pleasant Rise, private home | 7/29/2020 | permit issued, system repaired | Still River | bleed-out |
| 48 Skyline Drive, private home | 8/17/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 48 Longview Drive, private home | 9/11/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 12 Brookfield Meadows, private home | 9/15/2020 | permit issued, system repaired | Still River | bleed-out |
| 5 Skyline Drive, private home | 9/17/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |

| | | | | |
|---|---|---|---|---|
| 174 Pocono Road, private home | 9/17/2020 | permit issued, system repaired | Still River | bleed-out |
| 40 Old Middle Road, private home | 10/2/2020 | permit issued, system repaired | Still River | bleed-out |
| 19 Meadowbrook Road, private home | 10/15/2020 | permit issued, system repaired | Still River | bleed-out |
| 10 Hillside Circle, private home | 10/20/2020 | permit issued, system repaired | Still River | bleed-out |
| 57 Skyline Drive, private home | 10/26/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |
| 1 Gallows Road, private home | 11/20/2020 | permit issued, system repaired | Housatonic River | bleed-out |
| 51 Mountainview Drive, private home | 11/24/2020 | permit issued, system repaired | Candlewood Lake | bleed-out |

Information has been provided by the Town Sanitarian. The town also maintains a list of septic repairs as its normal practice even if there was no evidence of a failure. That list is available upon request.

### 3.8 IDDE reporting metrics

| Metrics | |
|---|---|
| Estimated or actual number of MS4 outfalls | 350 +/- |
| Estimated or actual number of interconnections | TBD |
| Outfall mapping complete | 100% |
| Interconnection mapping complete | 75% |
| System-wide mapping complete (detailed MS4 infrastructure) | 90% |
| Outfall assessment and priority ranking | 100% |
| Dry weather screening of all High and Low priority outfalls complete | 100% |
| Catchment investigations complete | 75% |
| Estimated percentage of MS4 catchment area investigated | 75% |

### 3.9 Briefly describe the IDDE training for employees involved in carrying out IDDE tasks including what type of training is provided and how often is it given (minimum once per year).

In 2020 all of our DPW employees were given an “in house” refresher conducted by the Town Engineer on the importance the six sections of the MS4 program and more specifically on IDDE and chloride application rates during a snow and ice event. We also trained two new DPW employees for the first time. The DPW Director also was given supplemental and up to date training on snow and ice control sponsored by WestCOG and given by Axiomatic on December 22, 2020.

Previously Reported

In 2019 all of Park and Recreation employees attended the CTI “Green Snow Pro Training”

In addition to our normal stormwater training, in 2018 special attention was paid to chloride applications as they relate to ice and snow control. All of our full time DPW employees were required to attend at least one training session provided by either WestCOG or The Connecticut Transportation Institute (CTI). The focus of that training was to provide the information necessary to make educated chloride application rate determinations as it relates to a specific storm, Equipment calibration was also addressed. This information will prove useful in reducing the amount of chlorides which enter the environment that enter bodies of water and ultimately groundwater and wells.

In 2018 the town also partnered with WestCOG in developing a regional snow management plan. The plan addressed methodologies for treating and removing snow and ice, material specifications, application rates for various treatments, costs, equipment and personnel needs and running efficient snow plow routes. The Department of Public Workforce has been trained in house by the Town Engineer regarding the importance of Stormwater Management, IDDE and BMP’s. They have been taught what to look for while working around stormwater infrastructure and how to respond. Additional training was schedule for 2018 to meet the annual training requirement. The training took place on April 5, 2018. Additionally the Director of Public Works/ Town Engineer attends monthly WestCOG meetings where MS4 has been a regular topic. People representing the CT DEEP, UCONNN Clear and HVA have also attended these meetings to present information and provide education and updates. The information gathered is shared with the relevant town personnel.

## 4. Construction Site Runoff Control (Section 6(a) (4) / page 25)

### 4.1 BMP Summary

| | BMP | Responsible Person |
|---|---|---|
| 2017 | Review existing language on construction site storm water management | Zoning / Land Use |
| | Develop interdepartmental coordination plan | Zoning / Land Use |
| | Implement interdepartmental coordination plan | Zoning / Land Use |
| | Implement site review and inspections program | Zoning / Land Use |
| | Implement public involvement component into development | Zoning / Land Use |
| | Implement process to notify developers of MS4 permit requirements | Zoning / Land Use |
| 2018 | Establish legal authority for construction site stormwater control | Zoning / Land Use |
| | Continue implementing previous practices | Zoning / Land Use |
| 2019 | Continue implementing previous practices | Zoning / Land Use |
| 2020 | Continue implementing previous practices | Zoning / Land Use |
| 2021 | Continue implementing previous practices | Zoning / Land Use |

**4.2 Describe any Construction Site Runoff Control activities planned for the next year, if applicable.**

In 2020 Development was approved for 731 Federal Road. The Northwest Conservation District will monitor and inspect the property during construction. LID measures have been incorporated into the construction plans. Final sediment basins and rain gardens will be inspected by Steve Trinkaus with expertise in low impact development. The site will be taking stormwater from the Federal Road, Route 7 and the site into two proposed storm water basins to improve water quality before it enters the Still River. The entire site measures 7.2 acres.

Previously Reported

Brookfield has addressed all MS4 requirements within their new zoning regulations rewrite, a process the town is currently undergoing. Internal and interdepartmental inspection and coordination processes have been created. Developers and contractors will be aware of the Town's MS4 requirements as they are stated and enforced within our zoning regulations.

During the initial stages of the development process there have been public workshops. There will be a public hearing of the complete rewrite of regulations before the Town adopts the new regulations. MS4 requirements will be incorporated in the zoning regulations. Each developer will be required to present plans that meet the requirements when developing or re-developing property in Brookfield

The ZEO has created an inspection spreadsheet and schedule for current and future developments. The ZEO will be responsible for overseeing the inspection and review process.
The Zoning Enforcement Officer shall have the legal authority to inspect erosion or sediment control measures for their effectiveness.

**5. Post-construction Stormwater Management (Section 6(*a*) (5) / page 27)**

**5.1 BMP Summary**

| | BMP | Responsible Person |
|---|---|---|
| 2017 | Review existing legal authorities for post-construction storm water management | Zoning / Land Use |
| | Develop DCIA Mapping Methodology | WestCOG / DPW |
| 2018 | Require developers to incorporate "LID" measures | Zoning |
| | Develop maintenance plan for detention/retention ponds | Zoning |
| | Develop maintenance plan for stormwater treatment structures | Zoning |
| | Provide an update on DCIA Mapping | Zoning |
| 2019 | Establish legal authority for post-construction stormwater management | Zoning |
| | Complete DCIA Mapping | WestCOG / DPW |
| 2020 | Update DCIA Mapping | WestCOG / DPW |
| 2021 | Update DCIA Mapping | WestCOG / DPW |

The Zoning Enforcement Officer shall have the legal authority to inspect erosion or sediment control measures for their effectiveness.

**5.2 Post-Construction Stormwater Management reporting metrics**

| Metrics | |
|---|---|
| Baseline (2012) Directly Connected Impervious Area (DCIA) | acres |
| DCIA disconnected (redevelopment plus retrofits) | acres this year / acres total |
| Retrofits completed | # |
| DCIA disconnected | % this year / % total since 2012 |
| Estimated cost of retrofits | $ |
| Detention or retention ponds identified | # this year /# total |

**5.3 Briefly describe the method to be used to determine baseline DCIA.**

In 2020 both the Land Use Department Manager and Director of Public Works attended a three part educational seminar sponsored by UConn Clear focusing on DCIA and LID measures and techniques. We will use the knowledge gained to institute them in future and existing development projects for both the town and private development. We have also partnered with the Housatonic Valley Association who is sponsoring a grant application to install a drainage retrofit at our Town Garage at 81 Gray's Bridge Road to filter storm water runoff before it enters the Still River.

Previously Reported

The Town is working with WestCOG to satisfy the DCIA mapping requirements. The amount of DCIA based on the amount of impervious cover and the land use for that area within a parcel. This information is applied to equations the EPA has adopted to estimate DCIA.

In 2018 the town mapped working with its various partners mapped and calculated all of its impervious surfaces.

The town adopted new Zoning Regulations in 2018. Zoning Article 6.8 of the new regulations address LID measures and provides maintenance requirements for detention ponds and stormwater treatment structures. The following are excerpts from the new regulations relating to the permit requirements.

**Require developers to incorporate "LID" measures:**

1. A Stormwater Management Plan ("SWM Plan") prepared in accordance with these Regulations is required to be include as part of the site plan for all applicable developments.
2. Guiding Principles: The SWM Plan shall be consistent with the purposes of Subsection 6.8(A) above, the principles and guidance set forth in the 2004 Connecticut Stormwater Quality Manual, and sound engineering and site planning practices, including known low impact development (LID) best management practices (BMPs). Bio retention techniques are preferred.

**Develop maintenance plan for detention/retention ponds:**

1. A Stormwater Management Plan ("SWM Plan") prepared in accordance with these Regulations is required to be include as part of the site plan for all applicable developments.

F. Required Stormwater Management Plan and Data

All new building construction, or an addition, alteration, or enlargement that results in an increase in the amount of impervious surface (paved drives, walks, patios, etc.) on a lot where the total impervious surface is ten percent or greater, shall require a Stormwater Management Plan. In addition to the data required elsewhere in these Regulations, the following data shall be required:

- A narrative report prepared by a licensed engineer indicating:
- Any risk or threat to Candlewood Lake or the water resources in its watershed from site development, site improvements, or on-site operations proposed in the application and measures
- Methods of assessment and best management practices to prevent and reduce any such risk or threat
- Supporting documentation, including calculations and engineering details, shall be provided to illustrate the existing and proposed development's compliance with these Regulations, which development shall be designed in accordance with the stormwater management design guidelines of the "Connecticut Stormwater Quality Manual" of 2004, as revised.
- A site plan indicating
- All relevant data required under Section 5.4(F)
- Location and area of all impervious surfaces on the site
- Location and area of turf cover (lawn areas)
- Location and area of all existing woodland areas
- Location and area of all existing and proposed vegetative buffer areas
- Location and description of all potential runoff and pollution sources including erosive soils and steep slopes
- Location and specification of all existing and proposed stormwater best management practices

G. Best Management Practices

The following practices and methods shall be incorporated into all Stormwater Management Plans where practicable:

- Vegetated swales, buffers, filter strips
- Level spreaders
- Grassed drainage swales, wet or dry
- Maintain or restore predevelopment vegetation
- Minimize creation of steep slopes
- Bio retention structures/residential rain gardens
- Rainwater harvesting/rain barrels
- Dry detention ponds
- Underground detention ponds
- Proper location and reduction of impervious surface area on site
- Disconnect flows from multiple impervious surfaces
- Permeable pavement choices
- Groundwater infiltration systems (curtain drains, drywells, galleries, etc.)

Develop maintenance plan for stormwater treatment structures:

A program for operation, monitoring, and maintenance of the stormwater management system, including scheduling of operation, monitoring, and maintenance activities, and observable physical signs of significant inadequate maintenance or function of the stormwater management system

**Table 2: EPA Land Use Classes and Corresponding Sutherland Equations**

| EPA Code | Land Use | Watershed Selection Criteria | Sutherland Equation (where IA(%) >1) |
|---|---|---|---|
| 1 | Commercial | Average: Mostly storm sewered with curb & gutter, no dry wells or infiltration, residential rooftops not directly connected | DCIA%=0.1(IA%)^1.5 |
| 2 | Industrial | Average: Mostly storm sewered with curb & gutter, no dry wells or infiltration, residential rooftops not directly connected | DCIA%=0.1(IA%)^1.5 |
| 3 | Low Density Residential | Somewhat connected: 50% not storm sewered, but open section roads, grassy swales, residential rooftops not connected, some infiltration | DCIA%=0.04(IA%)^1.7 |
| 4 | Medium Density Residential | Average: Mostly storm sewered with curb & gutter, no dry wells or infiltration, residential rooftops not directly connected | DCIA%=0.1(IA%)^1.5 |
| 5 | High Density Residential | Highly connected: Same as above, but residential rooftops are connected | DCIA%=0.4(IA%)^1.2 |
| 6 | Urban Public/ Institutional | Average: Mostly storm sewered with curb & gutter, no dry wells or infiltration, residential rooftops not directly connected | DCIA%=0.1(IA%)^1.5 |
| 7 | Agriculture | Mostly disconnected: Small percentage of urban area is storm sewered, or 70% or more infiltrate/disconnected | DCIA%=0.01(IA%)^2 |

## 6. Pollution Prevention/Good Housekeeping (Section 6(*a*) (6) / page 31)

### 6.1 BMP Summary

| | BMP | Responsible Person |
|---|---|---|
| 2017 | Continue implementing employee MS4 training | DPW / Land Use |
| | Develop catch basin cleaning plan | DPW |
| | Track disconnected DCIA Acreage | Land Use |
| | Establish and Implement Procedures for | Land Use / P&R / DPW |
| | parks and open space | |
| | pet waste | |
| | waterfowl | |
| | buildings and facilities | |
| | vehicles and equipment | |
| | leaves | |
| | street sweeping (including plan for outside priority area) | |
| | Street Sweeping plan for non-priority areas | |
| | Deicing Material | |

| | | |
|---|---|---|
| | Snow and ice control | |
| | Begin MS4 Monitoring | DPW / Consultant |
| 2018 | Track disconnected DCIA Acreage | Land Use |
| | Develop Retrofit Project Plan | Land Use |
| | Continue MS4 Monitoring | DPW/ Consultant |
| 2019 | Track disconnected DCIA Acreage | Land Use |
| | Continue MS4 Monitoring | DPW / Consultant |
| 2020 | Track disconnected DCIA Acreage | Land Use |
| | Continue MS4 Monitoring | DPW / Consultant |
| 2021 | Have 2% DCIA disconnected. Every additional year 1% disconnection. | Land Use |
| | Track disconnected DCIA Acreage | Land Use |
| | Continue MS4 Monitoring | DPW / Consultant |

**6.2 Describe any Pollution Prevention/Good Housekeeping activities planned for the next year, if applicable.**

The Department of Public Works:

In 2020 partnered with the HVA we have tested all of the outfalls along the Still River owned by the town. In addition we continued our testing along Lake Lillinonah. Test Results for 2020 are attached.

Previously Reported

On January 7, 2020 we met with the Housatonic Valley Association (HVA) to strengthen our partnership going forward as it relates to The Still River Watershed in Brookfield. Pollution detection and tracking and stormwater and water quality testing were part of that discussion. The HVA through the Clean Water Act has created a Still River Watershed Management Plan designed to identify and track pollution to the source and then eliminate it. This partnership has been formed in order to use limited resources as efficiently as possible since the town of Brookfield owns several outfalls on the river that fall under MS4. Through our partnership we plan on testing all of the outfalls in 2020.

In 2019 we continued testing all of our know outfalls to Lake Lillinonah. We did some testing on outfalls leading to the Still River and will do additional detailed testing as well as Pollution Tracking through a partnership we have created with the Housatonic Valley Association who is doing their work on the Still River as part of the Clean Water Act (which in some respects overlaps with the MS4 requirements.).

In 2018 and 2019 we will continue our relationship with Hydro Technologies who has been doing our MS4 and Industrial Stormwater testing for many years. MS4 testing was expanded in 2018 to test all outfalls that lead to impaired waters at least one time. Where we not deficiencies or where results are "red flagged" we will conduct follow up investigations.

The DPW conducted employee training in April of 2018. Part of that training addressed the identification of potential stormwater pollution sources as well has pollution identification and reporting.

In 2018 the DPW implemented a more formal catch basin inspection program. The most economical way to do that is to combine it with our street sweeping operation when it is necessary to clean around each basin to enable the street sweeper to pick up that debris. While cleaning around each basin the employee will be instructed to inspect each basin for deficiencies, dry weather flow or sumps that need cleaning. Where issues are observed the basin will be noted and the information will be sent to the appropriate individuals as part of the IDDE protocol.

The DPW is also in the process of formulating a more formal snow and ice control procedures. In 2018 we worked with WestCOG who has hired a consultant Axiomatic LLC who completed a regional study on our plow routes as well as material selection and application. The plan addressed methodologies for treating and removing snow and ice, material specifications, application rates for various treatments, costs, equipment and personnel needs and running efficient snow plow routes. Our ultimate goal is to minimize the amount of chlorides we introduce into the environment without compromising the safety of our residents.

In 2019 the DPW took action by implementing the findings of the WestCOG /Axiomatic study. We reviewed our plow routes and updated them in order to make them more efficient. Additionally by the first snow fall of 2019 all of our DPW and Parks and Recreation plow drivers as well as key management were trained by the state of Connecticut through the Connecticut Transportation Institute (CTI) "Green Snow Pro Training" seminar in the best management practices of a snow plow operation which included equipment maintenance and calibration as well as proper material selection and appropriate application rates for the materials selected and weather conditions.

The town has on file with the CT DEEP a current Industrial Permit for our Town Garage where all of our vehicle maintenance is completed. Part of that permit includes a Pollution Prevention Plan which includes good housekeeping and maintenance procedures designed to minimize the possibility of introducing pollution resulting from these activities into the surrounding environment.

Although the town does not support a leaf pick-up program, it has established an area in our CT DEEP approved site to collect leaves where they are composted.

Parks and Recreation:

Municipal turf management program actions (for permittee properties in basins with N/P impairments)

Parks and Recreation department Installed a rain garden at Cadigan Park which treats rain water that drains through to all- purpose synthetic athletic fields. These fields were installed in 2016 and completed during or just before the last MS4 permit application process. The synthetic fields replaced approximately 142,000 square feet of turf thus assisting in the reduction of pesticides by 20%.

The Parks and Recreation Department also updated its storm water drainage system at its town beach on Candlewood Lake which will reduce the levels of bacteria in the bathing areas particularly. The total cost of mitigation was approximately $175,000

Land Use:

Through the Land Use Department and via a grant obtained by CT DEEP and the Northwest Conservation District, the town retrofit a detention basin adjacent to the Police Department and along the Still River Trail in 2017. The basin is designed to collect and naturally filter runoff from the Municipal Complex, the town right of way and the trail. The total cost of this project was $25,000 but no costs were billed to the town.

In 2018-19 The Land Use department is working in conjunction with Northwest Conservation District and CT DEEP to put signage at the newly constructed wetland for the stormwater runoff from the Brookfield Town Hall and the Police Station. This signage will be an opportunity to the public to understand a low impact method of stormwater management and also will give insight to developers on the type of stormwater management that the Wetlands and Conservation Commission are interested in seeing in town. The signage copy is still in draft form; however, the final should be complete and the sign installed by the spring of 2019.

During storm events, the Constructed Wetland captures and holds stormwater runoff from the drainage system for the Town Hall Complex. The impervious area associated with the complex generates a variety of pollutants including sand, salt, oil, pet waste, and lawn, household and automotive chemicals. The system has many components which work in a natural fashion to reduce the pollutants directed to it.

Parks and Recreation:

Develop/Implement Parks & Open Space Management Procedures:
Fertilizers are used sparingly at municipal and school properties and athletic fields. Pesticides are used only when needed in accordance with the CT Pesticide Control Act.
Grass clippings are recycled into the lawns.
Leaf collection at municipal and school properties are composted at the Town's compost facility.

Implement pet waste management practices:
Garbage cans are provided and pet waste disposal requirements are posted at high use facilities.
There are no dog parks in Brookfield.
There are no known pet waste issues that pose a threat to wetlands or waterbodies.

Develop/Implement water fowl management practices:
Canada geese sometimes congregate at the Town Beach/Cadigan Park. We've employed deterrents including cut outs of dogs, temporary fencing, use of cat scat mats on docks, and addition of moving objects such as pinwheels. In 2019 we plan to begin using noise making devices to disperse geese. There is no known issue of residents feeding the geese.

**6.3 Pollution Prevention/ Good Housekeeping reporting metrics**

| **Metrics** | |
|---|---|
| Employee training provided for key staff | April 5, 2018,<br>April 2, 2019 |
| Snow and Ice Control (DPW) | October 2018 |
| **Street sweeping** | |
| Curb miles swept | 200 |

| | |
|---|---|
| Volume (or mass) of material collected | 500 tons +/- per year |
| **Catch basin cleaning** | |
| Total outfalls to Impaired Waters | 24 |
| Total catch basins in MS4 | 2000 +/- |
| Catch basins inspected | 100% |
| Catch basins cleaned | 351 in 2018<br>1250 in 2019 |
| Volume (or mass) of material removed from all catch basins | unknown |
| Volume removed from catch basins to impaired waters (if known) | unknown |
| Snow management | |
| Type(s) of deicing material used | NaCl / Magic-o liquid (MgCl) |
| Total amount of each deicing material applied | 3000 tons +/- (average) |
| Type(s) of deicing equipment used | Plow trucks and spreaders |
| Lane-miles treated | 200 |
| Snow disposal location | Recycle Yard as needed |
| Staff training provided on application methods & equipment | October 2018 |
| Municipal turf management program actions (for permittee properties in basins with N/P impairments) | |
| Reduction in application of fertilizers (since start of permit) | 20% (approx.) |
| Reduction in turf area (since start of permit) | 142,000 sq. ft. |
| Lands with high potential to contribute bacteria (dog parks, parks with open water, & sites with failing septic systems) | See above |
| Cost of mitigation actions/retrofits | $175,000 |

### 6.4 Catch basin cleaning program

**Briefly describe the method used to optimize your catch basin inspection and cleaning schedule. [Complete this section for the 2017 Annual Report only]**

We have continued our catch basin cleaning routine in 2020. Over the course of each calendar year every catch basin is inspected as part of our street sweeping operation. When a catch basin is inspected that needs to be cleaned it will be noted. This information will be given to the Highway Supervisor at the end of each day who will schedule the catch basin for cleaning. Cleaning will be done in house with our own manpower and catch basin cleaning equipment including a vac-truck.

In 2020 all of our roads were swept

In 2019 all of our roads were swept.

In 2018 the town invested $213,000 in a new street sweeper to replace our antiquated one that will make our sweeping operation better and more efficient.

### 6.5 Retrofit program

**Briefly describe the Retrofit Program identification and prioritization process, the projects selected for implementation, the rationale for the selection of those projects and the total DCIA to be disconnected upon completion of each project. [Provide information if available in 2017 report. Section to be completed for the 2019 Annual Report.]**

In 2020 we have also partnered with the Housatonic Valley Association who is sponsoring a grant application to install a drainage retrofit at our Town Garage at 81 Gray's Bridge Road to filter storm water runoff before it enters the Still River

Previously Reported

Within the DPW as part of our paving program we will continue to evaluate the current drainage needs as part of our road reconstruction plans for each road on the list. When possible we will eliminate basins and connections and encourage natural sheet flow runoff. We will also identify leader drain, footing drain and sump pump connections from residential homes to our stormwater system. When possible we will eliminate these connections.

**Describe plans for continuing the Retrofit program and how to achieve a goal of 1% DCIA disconnection in future years. [Provide information if available in 2017 report. Section to be completed for the 2019 Annual Report.]**

The DPW will continue the process described above. Based on current budgets we pave approximately 3 to 5 miles of road per year. Since Brookfield has approximately 100 miles of road this accounts for approximately 3% to 5% of our road and drainage system. We plan to continue this strategy into the foreseeable future.

Land Use overhauled and adopted new Zoning Regulations in 2018. This item was taken into consideration for future re-development projects. Actual percentages of disconnect will most likely correlate with the development activity and is hard to project at this time. With that said for many years the Town of Brookfield has been ahead of the curve in this area. The town has not let any resident tie into storm drains. All commercial development goes through a LID or Cultec system.

## Part II: Impaired waters investigation and monitoring [This section required beginning with 2018 Annual Report]

### 1. Impaired waters investigation and monitoring program

**1.1 Indicate which stormwater pollutant(s) of concern occur(s) in your municipality or institution. This data is available on the MS4 map viewer: http://s.uconn.edu/ctms4map.**

Nitrogen/ Phosphorus ☒ Bacteria ☒ Mercury ☐ Other Pollutant of Concern ☒

**Describe program status.**

**Discuss 1) the status of monitoring work completed, 2) a summary of the results and any notable findings, and 3) any changes to the Stormwater Management Plan based on monitoring results.**

In 2020 the town hired HVA to do additional testing outside of the requirements for MS4 from the town owned outfalls along the Still River.

2020 testing results are attached for all testing done in 2020 including the testing previously reported to the DEEP as well as the testing report and condition analysis completed by HVA for the Still River

Previously Reported

The Town is working with the Housatonic Valley Association (HVA) who has been for years and is currently actively monitoring the outfalls along the Still River which runs south to north through Brookfield. The HVA and the town have created a partnership. The HVA has agreed to provide the data they collect to the town when it is available so it can be made part of our annual report.

The town has also conducted its own testing through our consultant Hydro Technologies. The town has identified twenty-three (23) outfalls that discharge to impaired waters. Eleven (11) are associated with the Still River and are continually monitored by the HVA. The other twelve (12) discharge to Lake Lilllinonah. In 2018 the town conducted initial testing at each location. In addition we continued testing the original six (6) locations required under the previous permit for a total of nineteen (19) locations. Below is a chart of the results.

The Town Public Works Yard located at 81 Grays Bridge Road runs along the west bank of the Still River which is considered an impaired waterway. The property has two outfalls to the still river. Both outfalls are constructed with oil/grit separators. Visual inspections of the discharge is inspected at least once a month after significant rains to look for unusual colors, sediment and smells. Both of these outfalls are tested annually as part of our industrial Permit for the site. Results are filed with the CT DEEEP.

2020 Testing Results are attached

**2. Screening data for outfalls to impaired waterbodies (Section 6(i)(1) / page 41)**

2.1 Screening data collected under 2018 permit (included in above chart),

Additional testing conducted in 2019 was sent under a separate cover for the same outfalls listed.

**3. Follow-up investigations (Section 6(i) (1) (D) / page 43)**

**Provide the following information for outfalls exceeding the pollutant threshold.**

| Outfall | Status of drainage area investigation | Control measure implementation to address impairment |
|---|---|---|
| | *None for 2018* | |
| | *None for 2019* | |

**4. Prioritized outfall monitoring (Section 6(i) (1) (D) / page 43)**

**Once outfall screening has been completed for at least 50% of outfalls to impaired waters, identify 6 of the highest contributors of any pollutants of concern. Begin monitoring these outfalls on an annual basis by July 1, 2020.**

| Outfall | Sample Date | Parameter(s) | Results | Name of Laboratory (if used) |
|---|---|---|---|---|
| NA for 2018 | | | | |
| NA for 2019 | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Part III: Additional IDDE Program Data [**This section required beginning with 2018 Annual Report**]

1. **Assessment and Priority Ranking of Catchments data (Appendix B (A)(7)(c) / page 5)**

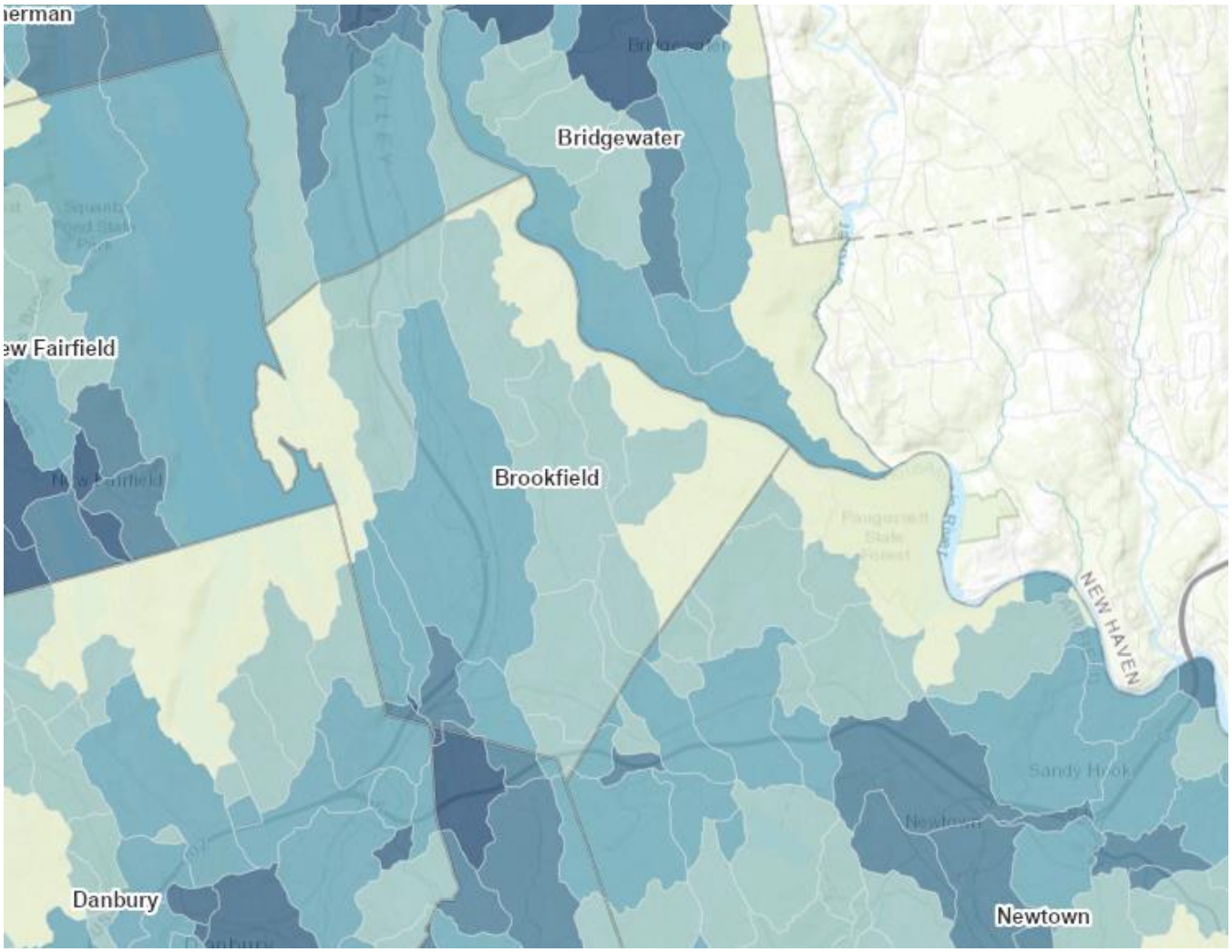
   **Provide a list of all catchments with ranking results (DEEP basins may be used instead of manual catchment delineations).**

The Town has hired Tighe and Bond to assist the Town in developing digital maps. We are currently in the process of identifying catchment areas and ranking the results. Data should be finalized for the 2019 report to include priority and ranking.

| Watershed Basin Number | Sub- Region |
|---|---|
| 6000-00 | Housatonic River |
| 6000-42 | Housatonic River |
| 6000-43 | Housatonic River |
| 6000-44 | Housatonic River |
| 6000-47 | Housatonic River |
| 6018-00 | Pond Brook |
| 6018-00 | Pond Brook |
| 6018-03 | Pond Brook |
| 6018-04 | Pond Brook |
| 6018-07 | Pond Brook |
| 6018-09 | Pond Brook |
| 6400-00 | Lake Candlewood |
| 6400-00 | Lake Candlewood |
| 6600-00 | Still River |
| 6600-07 | Still River |
| 6600-08 | Still River |
| 6600-09 | Still River |
| 6600-10 | Still River |
| 6606-04 | Limekiln Brook |

We have partnered with the WestCOG in order to prioritize our catchment areas in 2019. The data is currently available at the following link provided by WestCOG. In 2020 this information will be incorporated into this report.

http://www.arcgis.com/home/webmap/viewer.html?webmap=c02a359f13f2497b853c209a570093ac&extent=-73.9717,41.022,-72.3539,41.6623




4 to 8%
8 to 12%
12 to 20%
20 to 29%

In addition in 2019 we added impervious cover and estimated impervious percentages to our town MS4 digital maps. We will continue to streamline this as we move forward.

2. **Outfall and Interconnection Screening and Sampling data (Appendix B (A)(7)(d) / page 7)**

**2.1 Dry weather screening and sampling data from outfalls and interconnections**

**Provide sample data for outfalls where flow is observed. Only include Pollutant of concern data for outfalls that discharge into stormwater impaired waterbodies.**

In 2017, 2018, 2019 and 2020 as part of our street sweeping program we inspected ALL of our catch basins, not only those that led directly to outfalls. Our street sweeping personnel have been trained and continued to receive training in 2019 on how to identify an illicit discharge by noticing flows in extremely dry weather or by noticing an unusual color, texture or smell to the water flowing through each basin. When problems are identified the personnel on- site will inform their immediate supervisor who will start the investigation process. None were reported in 2019. A log of catch basins cleaned is maintained in the DPW office.

Previously Reported

As part of our catch basin cleaning program every catch basin was inspected in 2018. Due to the extremely wet weather in addition to the fact the town was severely damaged by a macroburst on May 15, 2018 each basin was not able to be inspected within the parameters of the permit. With that said every basin was inspected by personnel trained to identify illicit discharges.

**2.2 Wet weather sample and inspection data**

**Provide sample data for outfalls and key junction manholes of any catchment area with at least one System Vulnerability Factor.**

| Outfall / Interconnection ID | Sample Date | NH3 | CL | Conductivity | Salinity | E. coli or Enterococcus | Surfactants | Water Temp | Pollutant of concern |
|---|---|---|---|---|---|---|---|---|---|
| NA for 2020 | | | | | | | | | |
| NA for 2019 | | | | | | | | | |
| NA for 2018 | | | | | | | | | |
| NA for 2017 | | | | | | | | | |

3. Catchment Investigation data (Appendix B (A)(7)(e) / page 9)

3.1 System Vulnerability Factor Summary

For those catchments being investigated for illicit discharges (i.e. categorized as high priority, low priority, or problem) document the presence or absence of System Vulnerability Factors (SVF). If present, report which SVF's were identified. An example is provided below.

| Outfall ID | Receiving Water | System Vulnerability Factors |
|---|---|---|
| | NA- for 2020 | |
| | NA for 2019 | |
| | NA for 2018 | |
| | NA for 2017 | |

Where SVFs are:

1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages.
2. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs.
3. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints.
4. Common or twin-invert manholes serving storm and sanitary sewer alignments.
5. Common trench construction serving both storm and sanitary sewer alignments.
6. Crossings of storm and sanitary sewer alignments.
7. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system;
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations.
9. Areas formerly served by combined sewer systems.
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old in medium and densely developed areas.
11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).
12. History of multiple local health department or sanitarian actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance).

**3.2 Key junction manhole dry weather screening and sampling data**

| Key Junction Manhole ID | Screening / Sample date | Visual/ olfactory evidence of illicit discharge | Ammonia | Chlorine | Surfactants |
|---|---|---|---|---|---|
| NA- for 2017 | | | | | |
| NA for 2018 | | | | | |

3.3 Wet weather investigation outfall sampling data

| Outfall ID | Sample date | Ammonia | Chlorine | Surfactants |
|---|---|---|---|---|
| NA for 2017 | | | | |
| NA for 2018 | | | | |

3.4 Data for each illicit discharge source confirmed through the catchment investigation procedure

| Discharge location | Source location | Discharge description | Method of discovery | Date of discovery | Date of elimination | Mitigation or enforcement action | Estimated volume of flow removed |
|---|---|---|---|---|---|---|---|
| NA for 2017 | | | | | | | |
| NA for 2018 | | | | | | | |

Part IV: Certification

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the Connecticut General Statutes, pursuant to Section 53a-157b of the Connecticut General Statutes, and in accordance with any other applicable statute."

| Chief Elected Official or Principal Executive Officer | Document Prepared by |
|---|---|
| Print Name: Steve Dunn / First Selectman | Print Name :Ralph Tedesco / Director of PW |
| Signature / Date: | Signature / Date: |